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ABSTRACT

The microcomputer revolution promises to alter drastically the means of communicating and storing information in higher education. Ways in which computers can enhance faculty members' productivity include: (1) word processing; (2) information access; (3) electronic mail; (4) graphics; (5) accounting; and (6) learning. The response of faculty and colleges to this revolution thus far has been positive. (DC)

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HIGH TECHNOLOGY AND FACULTY EFFECTIVENESS: AN UPDATE

by Nick Eastmond

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HIGH TECHNOLOGY AND FACULTY EFFECTIVENESS: AN UPDATE

One of my most interesting lunch conversations recently was with the director of our campus computer center. We discussed ways in which the effectiveness of faculty could be improved using computer technology. The conversation gained momentum as we saw ways in which our own productivity could be enhanced.

The critics of higher education have pointed for many years at the "labor intensive" nature of our business. A professor in a classroom, writing with a piece of chalk on a blackboard, has epitomized the teaching process. In the office the professor has had a telephone, typewriter, and possibly a dictaphone, but these investments are small, totaling $2,000 or less. By contrast, the average farm worker today uses capital equipment totaling over $70,000, twice the $35,000 in plant and equipment invested in each manufacturing worker.

The microcomputer revolution at work in our country promises to change that picture drastically, with long-term consequences which are difficult to foresee. In academia, the professor will remain at center stage, but the means of communicating and storing information will be drastically altered. The sobering reality of these developments was stated well by Dr. Ray Clifford at the Defense Language Institute: "We used to say that computers would replace professors. I no longer believe that. The professor is simply too vital to the teaching process. But we can say with some certainty that PROFESSORS WHO USE COMPUTERS WILL REPLACE THOSE WHO DO NOT."

The change is occurring more rapidly than many of us would have supposed. For example, at Utah State University, with a faculty of over 800, APPLE microcomputers had been purchased by 220 persons at last count for office or for personal use. Since these computers were unavailable before 1979, purchase on this scale represents an investment of major proportions. The number of terminals for mainframe computers, as well as many other brands of microcomputers available, would probably double or triple the estimate of hardware above. At a national professional meeting I attended recently, well over half the audience raised their hands when asked, "How many of you are officed closer to a computer terminal than you are to a convenience copier?"

What are the dimensions of these changes? What strategies are currently available to enhance faculty members' personal productivity? The means outlined below suggest some ways that are available now.

1. WORD PROCESSING. The contrast between regular typing and word processing on one of the more sophisticated systems is striking. Not only is keyboard entry faster, but error correction is done electronically, prior to printing. Storage on magnetic disc is vastly more economical than in paper form and allows for access under a variety of descriptors rather than a single entry.

The applications for the college professor are many. A professional vita, for example, can be typed once and added to periodically. Research grant proposals can be written and amended easily, while papers can be co-authored via word processing even across states. Class tests can be created on the word processing system and changed easily to produce alternative forms and to improve questions. One professor I know makes all his lecture notes and class handouts available by computer to all students. Student papers are written on computer. When a student is ready for a paper to be corrected, he or she signals the instructor's computer file, and the paper can be called up from an office or home computer terminal, the paper graded and comments added by the instructor.

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2. INFORMATION ACCESS. Filing and storage of information were mentioned under word processing. Ways of locating quotations and articles, or ideas often misplaced, are possible in more organized fashion using various filing systems. Bibliographic searches by computer have been available for some time now. Subscriptions to data sources in specific fields and accessed by computer are becoming more common.

3. ELECTRONIC MAIL. Instantaneous transfer of written messages over telephone lines is now a relatively simple matter, via terminals or microcomputers with modem hookups. Electronic mail is analogous to giving everyone telegraph capability within an on-campus or off-campus network. The major time saving comes from sending and receiving at your own convenience (asynchronous communication), providing that the other parties are accustomed to "checking their mail."

4. GRAPHICS. In certain scientific fields, computer graphics are revolutionizing the ways in which problems are conceptualized. Designers can now rotate schematics in three dimensions and mathematicians examine equations in ways which have never been possible before. On a more practical level, transparency masters for classroom presentations can be readily generated by computer.

5. ACCOUNTING. The monthly printout from the central accounting offices is a campus service we now take for granted. For an individual faculty member, however, certain accounting functions come with the territory. For example, maintaining a gradebook electronically and keeping periodic printouts for easy use may save some computations and time.

6. LEARNING. Nationwide studies of Computer Assisted Instruction effectiveness examining the PLATO or TICCIT systems have shown little evidence of dramatic breakthrough. However, the downsizing of powerful equipment and the more widespread availability of economical microcomputers makes a change in that picture likely--*if appropriate software becomes available*. Seymour Papert at M.I.T. predicts the dawning of an era in which quantitative reasoning and computer logic will be as accessible to children as learning French is for a youngster growing up in France. Clearly, changes in the way we think lie ahead. How these will affect professors and teaching is not yet known.

The real question in this discussion is how faculty will react to these new, productivity-enhancing technologies. My experience so far suggests a willingness by faculty to try, to experiment--if results are demonstrable and if financial resources are made available. The growing accessibility to hardware on campus, which has only just begun, suggests greater receptivity than many would have predicted.

Some colleges are experimenting with new ways to enhance such change. For example, Carnegie-Mellon University has come out recently with an admission requirement that each student have a personal computer. Bucknell University has placed computer terminals to which microcomputers are now being added in all dorms. The prestigious Five Colleges Consortium has made available interest-free lease purchase arrangements for faculty to acquire personal computers.

From the standpoint of professional development, investment in a microcomputer system makes considerable sense. The dilemma in any productivity enhancement scheme is how to gain the resources in time and money needed to effect the change. The first time faculty generate test items on a computer or pull out overhead transparency masters will probably be more time consuming than previous methods. However, with a modicum of patience and a willingness to invest in ourselves, these high technology options for making faculty work easier, even while producing better results, are within reach. How will we as faculty choose to respond?

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KAREN WATKINS, EDITOR
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